Mithi Alexa C. de los Reyes

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Employment

Assistant Professor of Physics and Astronomy July 2023 - present
Department of Physics and Astronomy, Amherst College, Amherst, MA

Postdoctoral Researcher Aug. 2022 - July 2023
Kavli Institute of Particle Astrophysics and Cosmology, Palo Alto, CA

Education

California Institute of Technology, Pasadena, CA Sept. 2017 - June 2022
PhD in Astrophysics (June 2022)
Advisor: Evan Kirby
Thesis: *Dwarf Galaxies in the Local Universe as Probes of Stellar and Galactic Evolution*
MS in Astrophysics (June 2019)

Institute of Astronomy, University of Cambridge, UK Oct. 2016 - Jul. 2017
MPhil in Astronomy (August 2017)
Advisor: Rob Kennicutt
Thesis: *The Integrated Star Formation Law in Nearby Galaxies*

North Carolina State University, Raleigh, NC Aug. 2012 - May 2016
BS Physics (summa cum laude), BS Mathematics (summa cum laude)

Awards and Honors

LSST Scialog Fellow	2024
Stanford Science Fellowship	2022
Caltech Three Minute Thesis, First Prize and People's Choice winner	2021
Ford Foundation Dissertation Fellowship, Honorable Mention	2021
NSF Graduate Research Fellowship	2016
Winston Churchill Scholarship	2016
Astronaut Scholarship	2014 & 2015
Barry M. Goldwater Scholarship	2014
Park Scholarship (full-tuition merit scholarship to NCSU)	2012

Refereed Publications

(Asterisks $*$ note undergraduate or graduate students directly supervised by MAdlR)

de los Reyes, M.A., Asali, Y., Wechsler, R., Geha, M., Mao, Y.-Y., et al. (including *Grant, W.) "Stellar Mass Calibrations for Local Low-Mass Galaxies." (submitted to ApJ, arXiv:2409.03959)

Kado-Fong, E., Geha, M., Mao, Y.-Y., **de los Reyes, M.A.**, et al. "SAGAbg II: the Low-Mass Star-Forming Sequence Evolves Significantly Between $0.05 < z < 0.21$." (submitted to ApJ, arXiv:2409.12221)

Wang, Y., et al. (including **de los Reyes, M.A.**) "The SAGA Survey. V. Modeling Satellite Systems around Milky Way-mass Galaxies with Updated UniverseMachine." (submitted to ApJ, arXiv:2404.14500)

Geha, M., et al. (including **de los Reyes, M.A.**) "The SAGA Survey. IV. The Star Formation Properties of 101 Satellite Systems around Milky Way-mass Galaxies."

(accepted by ApJ, arXiv:2404.14499)

Mao, Y.Y., et al. (including **de los Reyes, M.A.**) "The SAGA Survey. III. A Census of 101 Satellite Systems around Milky Way-mass Galaxies." (accepted by ApJ, arXiv:2404.14498)

Zhuang, Z., Kirby, E.N., Steidel, C.C., **de los Reyes, M.A.**, et al. "Metals in Star-Forming Galaxies with KCWI. I. Methodology and First Results on the Abundances of Iron, Magnesium, and Oxygen." *The Astrophysical Journal* 972.182 (2024). doi:10.3847/1538-4357/ad5ff8

Kado-Fong, E., Geha, M., Mao, Y.-Y., **de los Reyes, M.A.**, et al. "SAGAbg I: A Near-Unity Mass Loading Factor in Low-Mass Galaxies via their Low-Redshift Evolution in Stellar Mass, Oxygen Abundance, and Star Formation Rate." *The Astrophysical Journal* 966.129 (2024). doi:10.3847/1538-4357/ad3042

Yuan, S., Wechsler, R.H., Wang, Y., **de los Reyes, M.A.**, et al. "Unraveling Emission Line Galaxy Conformity at $z \sim 1$ with DESI Early Data." (submitted to MNRAS, arXiv:2310.09329)

Wang, S., et al. (including **de los Reyes, M.A.**) "High-Resolution Chemical Abundances of the Nyx Stream." *The Astrophysical Journal* 955.129 (2023). doi:10.3847/1538-4357/acec4d

de los Reyes, M.A., Kirby, E.N., Zhuang, Z., Steidel, C.C., Chen, Y., Wheeler, C. "Dwarfs in Void Environments (DIVE): The Stellar Kinematics of Void Dwarf Galaxies Using the Keck Cosmic Web Imager." *The Astrophysical Journal* 951.52 (2023). doi:10.3847/1538-4357/acd189

de los Reyes, M.A., Kirby, E.N., Ji, A.P., Nuñez, E.H. "Simultaneous Constraints on the Star Formation History and Nucleosynthesis of Sculptor dSph." *The Astrophysical Journal* 925.66 (2022). doi:10.3847/1538-4357/ac332b

Zhuang, Z., Kirby, E.N., Leethochawalit, N., & **de los Reyes, M.A.** "NGC 147 Corroborates the Break in the Stellar Mass-Stellar Metallicity Relation for Galaxies." *The Astrophysical Journal* 920.63 (2021). doi:10.3847/1538-4357/ac1340

Kennicutt, R.C. & **de los Reyes, M.A.** "Revisiting the Integrated Star Formation Law. Paper II: Starbursts and the Combined Global Schmidt Law." *The Astrophysical Journal* 908.61 (2021). doi:10.3847/1538-4357/abd3a2

Shin, K., et al. (including **de los Reyes, M.A.**) "Metal Abundances across Cosmic Time (MACT) Survey. III. The Relationship between Stellar Mass and Star Formation Rate in Extremely Low-Mass Galaxies." *Monthly Notices of the Royal Astronomical Society* 502.2 (2021). doi:10.1093/mnras/staa3307

de los Reyes, M.A., Kirby, E.N., Seitenzahl, I.R., Shen, K.J. "Manganese Indicates a Transition from Sub- to Near-Chandrasekhar Type Ia Supernovae in Dwarf Galaxies." *The Astrophysical Journal* 891.85 (2020). doi:10.3847/1538-4357/ab736f

Kirby, E.N., et al. (including **de los Reyes, M.A.**) "Evidence for Sub-Chandrasekhar Type Ia Supernovae from Stellar Abundances in Dwarf Galaxies." *The Astrophysical Journal* 881.45 (2019). doi:10.3847/1538-4357/ab2c02

de los Reyes, M.A. & Kennicutt, R.C. "Revisiting the Integrated Star Formation Law. Paper I: Non-Starbursting Galaxies." *The Astrophysical Journal* 872.16 (2019). doi:10.3847/1538-4357/aafa82

Kneller, J.P. & **de los Reyes, M.A.** "The Effect of Core-Collapse Supernova Accretion Phase Turbulence on Neutrino Flavor Evolution." *Journal of Physics G: Nuclear and Particle Physics* 44.8 (2017). doi:10.1088/1361-6471/aa7bc8

Ly, C., et al. (including **de los Reyes, M.A.**) "The Metal Abundance Across Cosmic Time (MACT) Survey I: Optical Spectroscopy in the Subaru Deep Field." *The Astrophysical Journal Supplement Series* 226.5 (2016). doi:10.3847/0067-0049/226/1/5

de los Reyes, M.A., Ly, C., Lee, J.C., et al. "The Relationship Between Stellar Mass, Gas Metallicity, and Star Formation Rate for Hα-selected Galaxies at $z \approx 0.8$ from the NewHα survey." *The Astronomical Journal* 149.79 (2015). doi:10.1088/0004-6256/149/2/79

Additional Publications

de los Reyes, M.A. "Astronomers Need to Rename the Magellanic Clouds." *Physics* 16.152 (2023). doi:10.1103/Physics.16.152

Kahanamoku, S., et al. (including **de los Reyes, M.A.**) "A Native Hawaiian-led summary of the current impact of constructing the Thirty Meter Telescope on Maunakea." Astro2020 white paper (2020). arXiv:2001.00970

Khullar, G., et al. (including **de los Reyes, M.A.**) "Astrobites as a Community-led Model for Education, Science Communication, and Accessibility in Astrophysics." Astro2020 white paper (2019). arXiv:1907.09496

Successful Observing Proposals

"Star Formation in Massive Satellites around Milky Way Analogs" 2024Q3
de los Reyes, M.A., *Kleiman, S.
Perkins Telescope Observatory: PRISM (4 nights)

"Star Formation in Dwarf Galaxies as a Function of Environment" 2023Q4
de los Reyes, M.A., *Hillenkamp, E., Asali, Y.
Perkins Telescope Observatory: PRISM (4 nights)

"Nucleosynthesis in Degenerate Objects" 2018A, 2018B, 2019A, 2020A, 2021A
Kirby, E.N., **de los Reyes, M.A.**, Duggan, G.E.
Keck II: DEIMOS (7 nights)

"Chemical Abundances of Nyx Stars" 2020A
Necib, L., Ji, A., Strom, A.E., **de los Reyes, M.A.**
Keck I: HIRES (4 nights)

"Spatially Resolved Metallicities in Void Dwarf Galaxies" 2019B
Kirby, E.N., **de los Reyes, M.A.**, Steidel, C.S.
Keck II: KCWI (3 nights)

Invited Research Presentations

Astronomy Colloquium, University of Toronto Feb. 2025
Astronomy Colloquium, Wesleyan College Dec. 2024
Astronomy Colloquium, Dartmouth College Oct. 2024
Physics & Astronomy Colloquium, Williams College Apr. 2024

	Physics & Astronomy Colloquium, Williams College	Apr. 2024
	Astronomy Colloquium, University of Michigan	Mar. 2024
	Astronomy Colloquium, Eastern Michigan University	Mar. 2024
	FCAD Colloquium, UMass Amherst	Feb. 2024
	Galaxies Science Interest Group Meeting, NASA (link)	Nov. 2023
	Samahang Pisika ng Pilipinas 41st Meeting, Siargao, Philippines	July 2023
	CIERA Observers Seminar, Northwestern University Center for Interdisciplinary Exploration and Research in Astrophysics (CIERA)	May 2023
	GANAP Seminar, University of the Philippines Diliman	Mar. 2023
	Cosmology & Astronomy Seminar, UC Davis	Jan. 2023
	Physics Colloquium, Davidson College	Nov. 2022
	AAS Journal Author Series, American Astronomical Society (link)	July 2022
	Astronomy Seminar, Departamento de Astronomia IAG-USP	June 2022
	Astro/Space Seminar, University of Kansas	Nov. 2021
	Physics & Astronomy Colloquium, Pomona College	Nov. 2021
	Theoretical Astrophysics Center Seminar, UC Berkeley	Nov. 2021
	Astro Lunch, University of Pittsburgh/Carnegie Mellon University	Oct. 2021
	Astronomy Seminar, Michigan State University	Oct. 2021
	Galaxy Hour, Ohio State University	Oct. 2021
	Science Happy Hour, Northwestern University CIERA	Oct. 2021
	Lunch Talk, Carnegie Observatories	Sept. 2021
	CfA Seminar, Center for Astrophysics | Harvard & Smithsonian	Sept. 2021
	Physics & Astronomy Colloquium, Cal Poly Pomona	Oct. 2019
Contributed Research Presentations	*Dwarf Galaxies, Star Clusters, and Streams in the LSST Era* (KICP)	July 2024
	243rd AAS Meeting (New Orleans, LA)	Jan 2024
	Dwarf Galaxies in the Local Volume and Beyond (Flatiron/CCA)	July 2023
	Keck Science Meeting (UCSD)	Sept. 2021
	235th AAS Meeting (Honolulu, HI)	Jan. 2020
	Keck Science Meeting (UCLA)	Sept. 2019
	233rd AAS Meeting; Chambliss Student Award Winner (Seattle, WA)	Jan. 2019
	Stellar Archaeology as a Time Machine (Kavli IPMU, Tokyo, Japan)	Dec. 2018
	Laws of Star Formation (Institute of Astronomy, Cambridge, UK)	July 2018
	232nd AAS meeting (Denver, CO)	June 2018
	The Scales of Star Formation in Galaxies (Sexten, Italy)	July 2017
	223rd AAS meeting (Washington, DC)	Jan. 2014
Other Invited Presentations	*CfA | Harvard, Equity & Inclusion Journal Club*	Jan. 2025
	SciTech Cafe	Oct. 2024
	Committee On Inclusiveness in SDSS	May 2024
	Mount Holyoke College Astronomy Club	Apr. 2024
	Amherst College HPC Celebration	Apr. 2024
	XMC Workshop: Milky Clouds over Manhattan (Flatiron/CCA)	Feb. 2024
	Lamat AstroTalk (UCSC)	June 2023
	KIPAC Community Day	Apr. 2023
	Open Cultural Astronomy Forum Seminar	Feb. 2023
	San Diego Astronomy Association	Oct. 2020
	California Academy of Sciences Virtual NightLife series	July 2020
	Caltech Astronomy Stargazing and Lecture series	May 2020
	Astronomy on Tap: Los Angeles	Jan. 2018

Teaching

Instructor of record, Amherst College

- Observational Techniques (ASTR 337): Fall 2023, Fall 2024

- Introductory Astrophysics (ASTR 235): Fall 2024
- Advanced Astrophysics (ASTR 352): Spring 2024, Spring 2025
- Intro to Data Science with Astronomical Applications (ASTR 200): Spring 2024, Spring 2025

Pedagogical Partner Program member, Amherst College

- Worked with student partner Ha Dong '26 to develop teaching practices for ASTR 352 (Spring 2024)

Teaching assistant, Caltech

- Assisted, guest lectured for, and developed course materials for Ay123 (graduate-level Stars), Ay124 (graduate-level Galaxies), Ay126 (graduate-level Interstellar Medium), Ay101 (undergraduate-level Stars)

Mentorship

Undergraduate honors thesis students

- Kinsey Cronin (class of 2025)
- Elizabeth Hillenkamp (class of 2024): "BRIDGE-ing the Intermediate-Mass Black Hole Gap: Analysis of a Candidate Wandering Black Hole in a Dwarf Galaxy"

Undergraduate advising

- Research supervisor for 5 Amherst students and 3 non-Amherst students
- Amherst Summer Undergraduate Research Fellowship (SURF): research supervisor for 3 students
- Mini-course instructor in Amherst STEM Incubator program, dedicated to introducing students from underrepresented backgrounds to research

Graduate advising

- Leo Barba (UMass PhD student): Initial Research Project on "Gas Kinematics in Nearby Dwarf Galaxies"

Outreach and Professional Service

College service

- Amherst College Observatory Director — Aug. 2024 - present
  - Manages and maintains 5 rooftop telescopes
  - Coordinates with student observatory managers
  - Runs outreach events for Amherst College community, admissions events, and general public
- Department Climate and Community Committee — Aug. 2024 - present
- Other service and outreach
  - Academic advisor for 9 Amherst undergraduates (6 first-year advisees, 3 physics/astronomy majors)
  - Invited panelist at 2024 Amherst College New Faculty Orientation
  - Organized Solar Week (4 days of tabling and science demos leading up to total solar eclipse in Apr. 2024, handed out >1000 eclipse glasses)

Professional service

- Reviewer (within past 5 years) for *NASA*, *European Research Council*
- Journal referee (within past 5 years) for *Astronomy & Astrophysics*, *Astronomical Journal*, *Astrophysical Journal*, *Monthly Notices of the Royal Astronomical Society*